



How to Design a Building

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HOW TO DESIGN A BUILDING



JENNY RUSSELL



HOW TO DESIGN A BUILDING

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ISBN:

HOW TO DESIGN A BUILDING



JENNY RUSSELL

The aim of this book is to introduce children to the subject of architecture and the different things that an architect has to think about when they are designing a building.

It is a book which celebrates the art of THINKING.

Enjoy thinking about HOW TO DESIGN A BUILDING.

THE BIG QUESTIONS

An architect is someone whose job it is to design buildings.

When an architect designs a building, they have to ask six very important questions. This book is going to tell you what these questions are and the important things that have to be considered when answering them.

WHY is the building needed?

WHAT does the building need to do?

WHERE will it be built?

WHO will use it?

WHEN will it need to be finished?

HOW to design a building?

WHY?

AN ARCHITECT DESIGNS BUILDINGS FOR PEOPLE.

The person who asks the architect to design the building is called the **CLIENT**.

The client is the person who provides the funding for the building and may be the person who will use the building when it is finished.

The client will have a reason for why they need a building and may have ideas for what they want their building to be like. Their ideas may relate to the different types of activities that will take place within the building or what the building should represent.

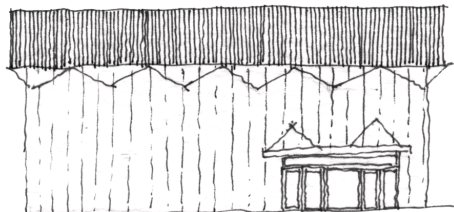
Buildings are classified in different ways.

Can you guess what sort of buildings these terms refer to?

COMMERCIAL



LEISURE



These building 'classifications' can be grouped together depending on the different people who use them.

These different groups are described as PUBLIC or PRIVATE

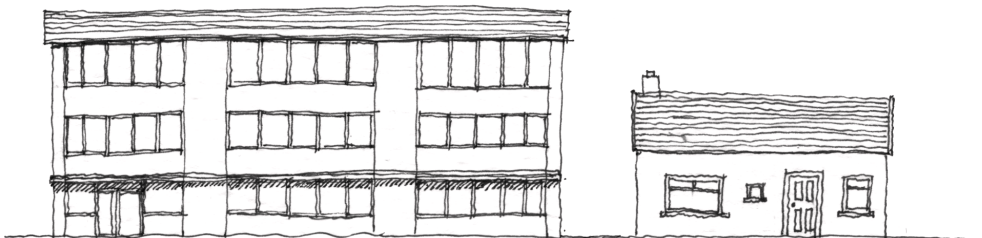
PUBLIC BUILDINGS are buildings which are used by lots of different people and which are owned by the public. They may be owned by a country, a town or a community and can be used by anyone: The public (everyone including you and me) are able to have free access to them.

Some examples of public buildings are libraries, museums and hospitals.

PRIVATE BUILDINGS are buildings which are only accessible to certain people and are owned by specific individuals or groups. All buildings that are not public buildings are private buildings. Some buildings are privately owned but the public are invited to use them.

EDUCATIONAL

RESIDENTIAL

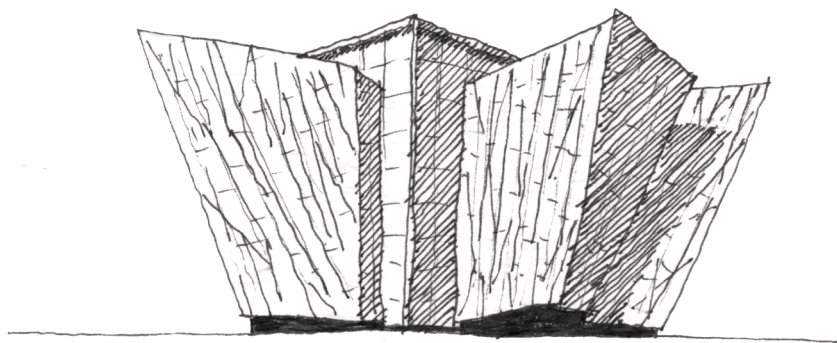


PUBLIC



Belfast City Hall

PRIVATE



Titanic Belfast

WHO?

THE CLIENT MAY OR MAY NOT BE THE PERSON WHO WILL FINALLY USE THE BUILDING.

These people are called the **USERS.**



If the client asked the architect to design them a house, they will probably also be the user, that is, the house will be designed for the client to live in.



If the client asked the architect to design a hospital, they will not be the final user. A hospital has many users: doctors, patients, nurses, porters, cleaners and many others.

The architect needs to consider all of the people who will use the building.

If you were asked to design a school, who would the different users be?

TWO OF THE USERS ON YOUR LIST WILL
PROBABLY BE TEACHERS AND CHILDREN.

What different spaces do you think that the teachers and children will need?

TEACHERS

Example: staffroom

CHILDREN

Example: playground

One of the differences between teachers and children in a school building is **SIZE**



Look at the picture above: The biggest person can see the ground outside the window. The smallest person can only see the sky.

It's really important to think about all of the different users of a building when you are designing it.

WHAT?

When an architect is asked to design a building by a client, they have to work out exactly what it is that the client wants.

The initial list of the client's requirements is called the **BRIEF**.

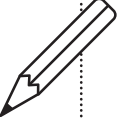
Sometimes a brief is a vague list of ideas or it may be a comprehensive list of all of the client's requirements such as the spaces that need to be in the building, the size of each space and any specific requirements that each space may have.

If the architect was going to be designing a brief for a house it may look like this:

SPACE FOR RELAXING/COOKING/EATING
ROOM FOR PARTIES
SLEEPING FOR PARENTS
2 GUESTS AND 3 KIDS
AN AMAZING SPACE TO SIT OUTSIDE
A PLACE FOR BBQ'S
LOTS OF WALL SPACE TO HANG PICTURES



Kitchen: 3mx4m with utility
space attached: 2mx1m
Dining Room: 3mx4m
Living Room: 4mx4.5m
Bathroom: 2mx3m
Bedrooms (x6): from 4mx3m to
3mx2m
Study: 2mx2m



What would a brief for a new school contain?

For example: should it have lots of classrooms all the same... or should a Maths room be different from an Art room or an English room?... You decide!

Why not sketch some of your ideas here...

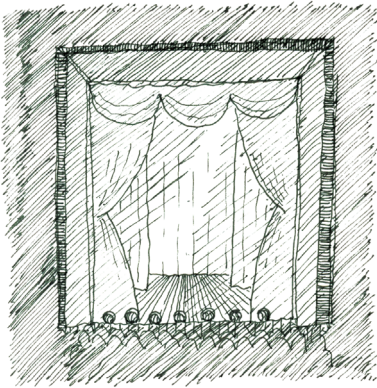
The client and the architect need to think about the different types of

ENVIRONMENT that are required within the building.

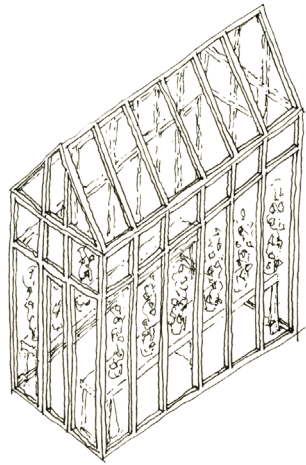
What does this mean?

When we talk about the environment, we usually think about all of the different elements around us like air and light and water.

In a building, the environment is no different. It refers to the air in the building, should it be still or moving, heated or cooled, whether spaces need to be dark or light and whether they need to be watertight or not.



A THEATRE needs to be dark so that you can see what happens on the stage



A GREENHOUSE needs to let light in, be watertight and get nice and hot for plants to grow.

WHERE?

When a client asks an architect to design a building, they usually have a specific place where they want it to be built.

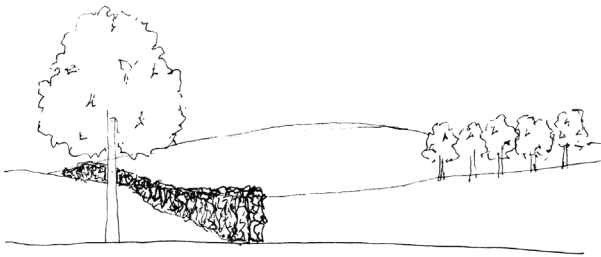
This place is called the **SITE**.

What information do you think the architect would need to know about the site before they design a building?

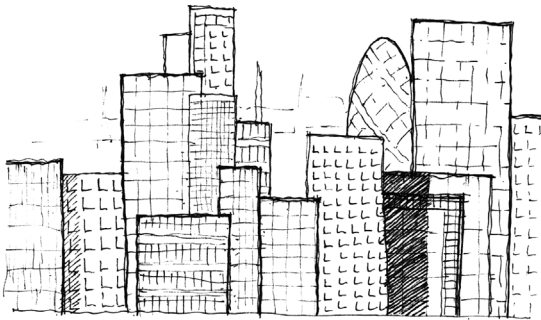
For example: is it flat? what direction does the sunlight come from?

The architect needs to know lots of information about the site before they design a building.

CONTEXT is a word that is used to describe everything around the site for a building.

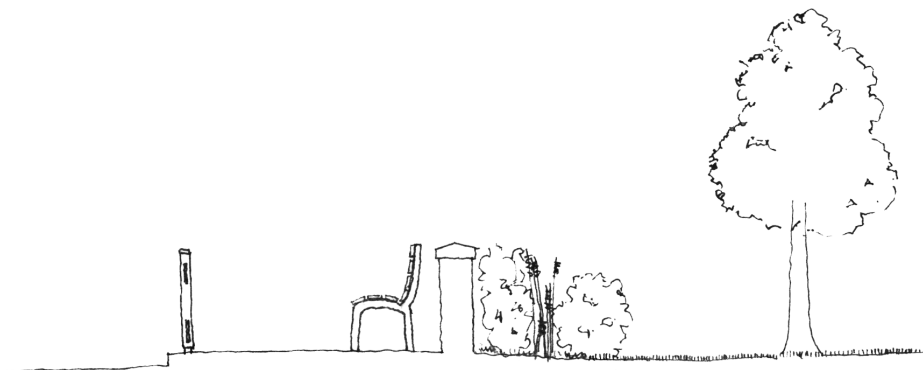


If the context is **RURAL**, this means that it will be located in a village or the countryside.



If the context is **URBAN**, this means that it will be located in a town or a city.

LANDSCAPE is a word that is used to describe how an architect deals with the space outside the building if the building doesn't take up all of the site.



HARD landscaping describes things like footpaths and public squares.

SOFT landscaping describes things like trees, grass and bushes.

Landscape can contain seats, playgrounds, sculpture and.....

Can you think of some other examples of landscape?

WHEN?

The length of time that a building takes to be designed and built depends on the needs of the client, the way in which the building will be constructed and the number of different factors that are in the brief.

This is called the project **TIMEFRAME.**

There are five main stages that an architect has to complete within the timeframe for a project.

1. GATHERING INFORMATION

this includes building the brief and collecting all of the required information about the site.

2. THE BIG IDEA

another name for this is the concept. It is the idea behind the project and usually relates to the site and brief.

3. THE INITIAL DESIGN

this is the architect's first attempt at responding to the brief by putting together all of the necessary spaces.

4. DETAIL DEVELOPMENT

this is the development of the idea into a series of detailed drawings that can be used to explain the building to a builder.

5. THE BUILDING PROCESS

following the detailed drawings, the architect will give these to a builder who will construct the final building.

Think of something that you have to do.....

For example tidy your room!

Using five stages, try to write a plan to help you to tidy your room in an organised way:

1.

2.

3.

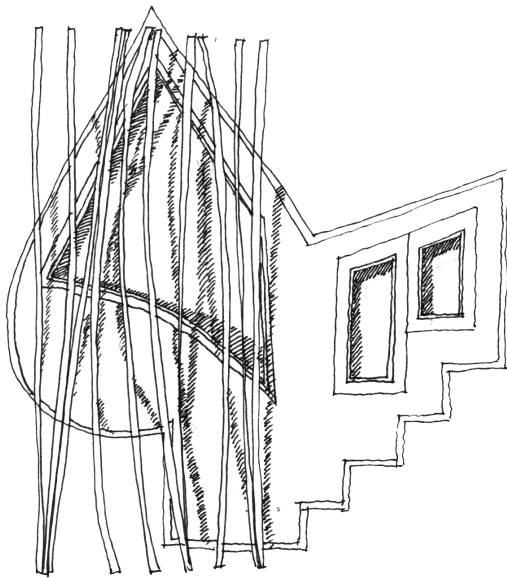
4.

5.

The project timeframe can effect the decisions that an architect makes regarding how a building is built.

If a building has to be built within a short timeframe, then the architect will use materials which are easily available and standard sizes.

If the length of time to finish the building is not particularly important, then the architect may choose to design special elements which have to be individually made. The word to describe these elements is **BESPOKE**.



These bespoke window boxes were designed by Spanish architect, Enric Miralles, for the Scottish Parliament. Members of Parliaments can sit in them and look out of the window through the bamboo screen.

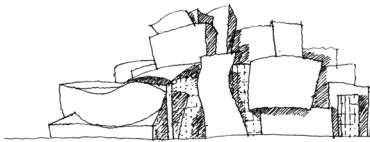
HOW?

So how does an architect come up with the idea for the design of a building?

The **IDEAS** for a building may come from the context - where the building will be, the users - who will use the building and the brief - what space the building will provide, but is this enough information with which to design a building?

NO...the architect will need to use **IMAGINATION**

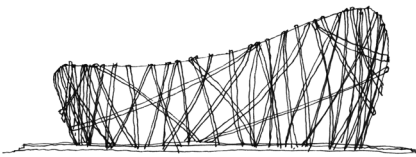
Here are some examples of buildings where you can see the architect's imagination at work.



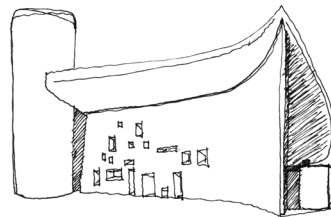
Guggenheim Museum,
Bilbao, Frank Gehry



Sydney Opera House,
Sydney, Jorn Utzon



Birds Nest Stadium,
Beijing, Herzog & De Mueron



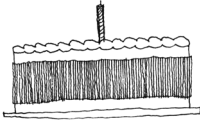
Chapel of Notre Dame du Haut,
Rondchamp, Le Corbusier

An architect's tools are primarily drawing and model-making. These tools help them to visualise what they are designing.

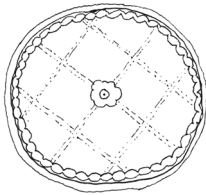
Different types of drawings help to describe different things.
To explain this, let's use a birthday cake!...



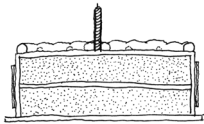
This drawing is a **SKETCH**. It is 3-dimensional and helps you to have an overall view of the cake.



This drawing is an **ELEVATION**. It is a view of the cake from the side. It looks directly at it so you don't see any curves.

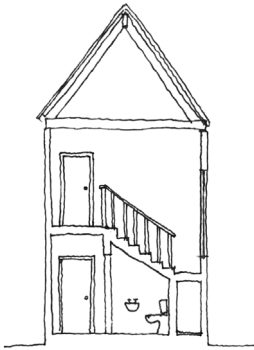


This drawing is a **PLAN**. It shows what the cake looks like when you look down on it from above.

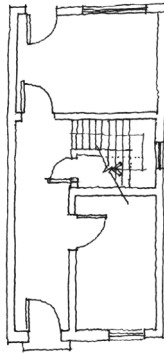


This drawing is a **SECTION**. It shows what the cake looks like when it when a cut is made through it.

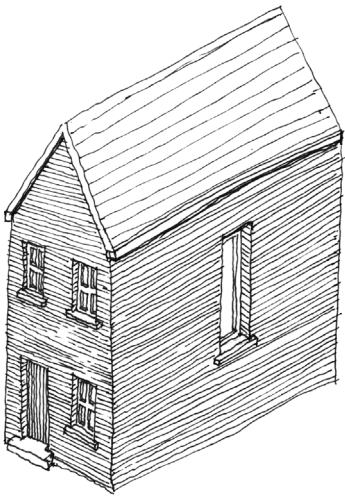
Look at these drawings of the house from the front cover of this book.
Can you name the different types of drawings?



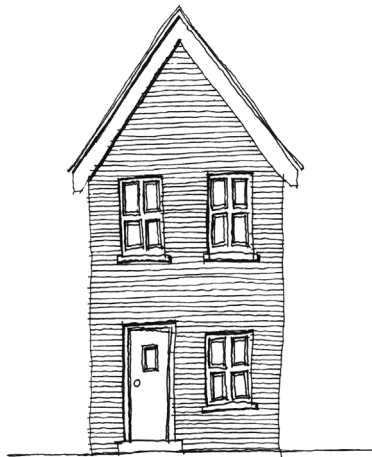
ANSWER:



ANSWER:



ANSWER:

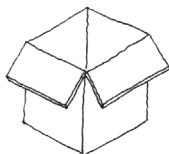


ANSWER:

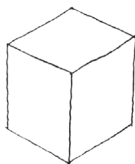
SPACE...

The space inside a building is made up of all the areas enclosed by the walls:

If you could see the space
inside this cardboard box



it would look like this.



...AND PLACE

A famous Architect from Holland whose name was Aldo Van Eyck once said
that a space becomes a place when it has people in it.

What is your favourite place at school?

Why not draw it here...

GREAT BUILDINGS ARE FULL OF INTERESTING SPACES AND PLACES

The space within a building is usually divided up into different areas or rooms which are listed in the brief.

CIRCULATION is the space through which you move to get between different areas or rooms in a building. It can refer to corridors, staircases and entrance halls. It links the inside, outside and different levels within a building. It can be a really special and exciting experience.

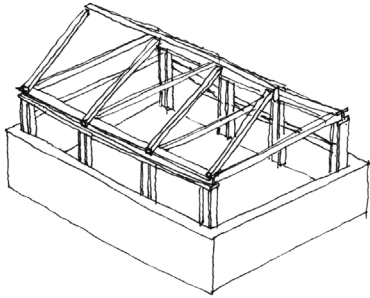
What would you do to make this corridor an exciting space to walk through?



Think about using roof lights and windows, changing the height of the ceiling and the type of door.

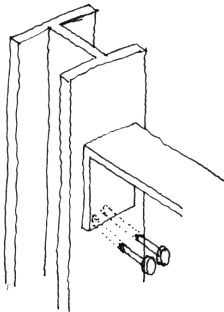
Construction is the **MAKING** of architecture: How it 'stands' up and 'what' it is made of.

Constructing a building is like doing a huge three-dimensional jigsaw puzzle with lots of different pieces.



How a building is 'made' starts with the big stuff - the structural frame which means how the walls, floors and roofs fit together....

however...



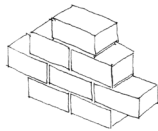
...it is also concerned with the small stuff - how the different parts fit together.

The type of construction used in a building depends on the material that the building will be made of.

Different materials give different textures, shapes and weights.

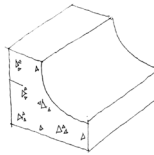
The main materials that a building is constructed from are:

MASONRY



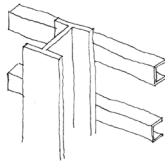
Masonry refers to small items like bricks which are stacked on top of each other to create solid walls.

CONCRETE



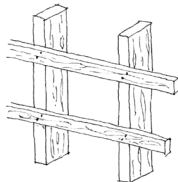
Concrete is a material which is poured as a liquid but hardens into a very strong solid. It can be moulded into different shapes

STEEL



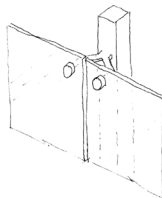
Steel is a metal which is used to build frames. Steel frames are pinned together, are lightweight and can be built very quickly.

TIMBER



Timber is another name for wood. It can be used, like steel, to build frames however it is a natural material is cheap to buy.

GLASS



Glass usually comes in sheets and is used for windows or windows to give views out or let light in.

Do you think you could design a building?

THE CHALLENGE

Try to design a special classroom to sit somewhere in your school grounds for you and your class to use to learn about nature.

Work through the questions in this book and try to produce a plan, a section and an elevation of your design. Good Luck!



THE CHALLENGE

I hope that you have enjoyed learning a little bit about architecture.
If you would like to find out more, you can go to:
www.placeni.org/howtodesignabuilding

GLOSSARY OF TERMS

ARCHITECT

An Individual who is trained to design buildings

BESPOKE

Individually designed elements of a building.

CIRCULATION

The space through which you move round a building, including corridors, stairs, open spaces. etc

CLIENT

The person who employs an architect to design a building

CLIMATE

The weather that affects a place

CONSTRUCTION

the process by which a building is built.

CONTEXT

The surroundings in which a building sits.

ELEVATION

A drawing used to show what the front, back or sides of a building looks like.

ENTRANCE

The point at which you enter the building.

ENVIRONMENT

Within a building, the environment refers to the different elements that effect the space, for example: light, heat and air.

LANDSCAPE

The ground covering around a building. This may be hard or soft.

MATERIALS

The different types of 'stuff' with which a building is made

MIXED-USE BUILDING

A building which has elements owned and used by the public and other spaces that are privately owned.

PLACE

A defined area of space which can be given a specific name.

PLAN

A drawing used to show what the layout of a building looks like.

PRIVATE BUILDING

A building owned by an individual or a specific group.

PUBLIC BUILDING

A building owned and used by the public.

SECTION

A drawing used to show a slice through a building in order to understand how the different spaces sit on top of each other.

SITE

The location for a building

SKETCH

A simple drawing used to describe something.

SPACE

The world around us which within which objects and people are located

STRUCTURE

The elements of a building that make it stand up.

THRESHOLD

The point at which you move from one space to another.

USERS

The people who will use a building when it is built.

Do you think you could explain what these terms mean?

BIOGRAPHY

place